

REMARKS

Claims 1, 2, 4-7, 9-14 and 20-32 are pending in this application. By this Amendment, Claims 1, 9 and 14 are amended, and Claims 31 and 32 are withdrawn from consideration as being drawn to a nonelected invention. Favorable reconsideration is respectfully requested in light of the following Remarks.

Applicant gratefully acknowledges the courtesies extended to Applicant's representative during the March 15, 2006 telephone interview. The sum and substance of the interview is contained in the above Amendment and following Remarks.

Entry of this Amendment is proper under 37 CFR §1.116 because this Amendment: (a) places the application in condition for allowance (for the reasons discussed herein); (b) does not raise any new issue requiring further search and/or consideration because the amendments amplify issues previously discussed throughout prosecution; (c) does not add claims without deleting a corresponding number of claims; and (d) places the application in better form for appeal, should an appeal be necessary.

With respect to item (b) above, independent Claims 1, 9 and 14 that were searched and examined in the outstanding Office action defined a propeller shaft assembly comprising a tubular member or metal tube and a tubular support member disposed within the tubular member or metal tube having an inner surface forming a cylindrical cavity.

As amended herein, independent Claims 1, 9 and 14 more clearly define the feature of the cylindrical cavity being an empty cavity to more clearly distinguish this feature from the art cited in the outstanding Office action. It is respectfully submitted that the search of a cylindrical cavity recited in independent Claims 1, 9 and 14 that were considered by the Examiner in the outstanding Office action would encompass a cylindrical, empty cavity recited in the amended Claims 1, 9 and 14. Thus, a new search and/or consideration is not required by the Examiner with respect to amended Claims 1, 5 and 9 as amended herein. In view of the foregoing, entry of this Amendment is thus respectfully requested.

I. Election/Restriction

The Office action asserts that Claims 31 and 32 are withdrawn from further consideration as being drawn to a non-elected invention. By this Amendment, Claims 31 and 32 are indicated

as being withdrawn. However, it is noted that Claims 31 and 32 depend from independent Claim 14, which is a linking claim, and thus Claims 31 and 32 will be rejoined and allowable when Claim 14 is allowable.

II. The Claims Satisfy The Requirements of 35 USC 112, First and Second Paragraphs

1. The Office action rejects Claims 1, 2, 4-7, 9-14, 20, 21 and 23-30 under 35 USC 112, first paragraph. Specifically, the Office action asserts that the feature of a tubular member having an outer surface defined by an invariable outside diameter and an inner surface defined by an invariable inside diameter, as recited in Claims 1, 9 and 14, is not supported by the specification. The rejection is respectfully traversed.

As described in Paragraph [0022] of the specification, the hollow tube 20 includes an interior surface 22 and an exterior surface 24. As shown in originally filed Figures 2 and 3, the interior surface 22 is defined by an invariable inside diameter, and the exterior surface 24 is defined by an invariable outside diameter. Thus, the subject matter of Claims 1, 9 and 14 is described in the application as originally filed, and satisfy the requirements of 35 USC 112, first paragraph. Withdrawal of the rejection is respectfully requested.

2. The Office action rejects Claims 9-13, 23 and 28-30 under 35 USC 112, second paragraph. The rejection is respectfully traversed.

By this Amendment, Claim 9 is amended to change the phrase “an interior” surface of the metal tube to “the inner” surface of the metal tube to provide proper antecedent basis. Withdrawal of the rejection is respectfully requested.

III. The Claims Define Patentable Subject Matter

1. The Office action rejects Claims 1, 2, 5-7, 9, 10, 12-14 and 23-30 under 35 U.S.C. §102(b) as being anticipated by McNeely, Jr. (U.S. Patent No. 4,560,012, hereinafter “McNeely”). The rejection is respectfully traversed.

McNeely discloses a drill collar structure comprising a tubular member T including an elongated tubular structure 30 formed by inner and outer tubes 31, 32. The tubes 31, 32 are

separated forming an annular space or void 33 therebetween. The annular space 33 is filled with a rigid, solid material 33a to preclude relative movement between the inner and outer tubes 31, 32. *See Fig. 2; col. 3, lines 46-62.*

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See MPEP §2131.* As amended, Claims 1, 9 and 14 are directed to the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical, empty cavity within the tubular member. Within the ordinary meaning of the claimed invention, an empty cavity is defined as a cavity that does not include a solid structure, such as a tube, and the like. However, an empty cavity that includes a fluid, such as air, and the like, would fall within the ordinary meaning of the claimed invention. It is respectfully submitted that at least this feature is not disclosed, taught or suggested in McNeely, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claims 1, 9 and 14 are allowable over the applied art. Claims 2, 5-7, 10, 12, 13 and 23-30, which depend from Claims 1, 9 and 14, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

2. The Office action rejects Claims 1, 6, 24 and 27 under 35 U.S.C. §102(b) as being anticipated by Clifford (U.S. Patent No. 373,339, hereinafter “Clifford”). The rejection is respectfully traversed.

Clifford discloses a shaft comprising three tubes a, b, c. *See Figs. 1 and 2.*

Similar to McNeely, there is no mention in Clifford of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical, empty cavity within the tubular member, as recited in Claim 1, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claim 1 is allowable over the applied art. Claims 6, 24 and 27, which depend from Claim 1, is likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

3. The Office action rejects Claims 1, 4, 6 and 27 under 35 U.S.C. §102(e) as being anticipated by Dewimille et al. (U.S. Patent No. 6,530,137, hereinafter “Dewimille”). The rejection is respectfully traversed.

Dewimille discloses a heat-insulated pipe 1 disposed within a layer of insulation 3 and an external sealed sheath 10. *See Fig. 1a; col. 2, lines 65-67; col. 3, lines 61-63.*

Similar to McNeely and Clifford, there is no mention in Dewimille of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical, empty cavity within the tubular member, as recited in Claim 1, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claim 1 is allowable over the applied art. Claims 4, 6 and 27, which depend from Claim 1, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

4. The Office action rejects Claims 20 and 21 under 35 U.S.C. §103(a) over McNeely. The rejection is respectfully traversed.

Claims 20 and 21 depend from Claim 1. As stated in Paragraph III.1 above, there is no mention in McNeely of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical, empty cavity within the tubular member, as recited in Claim 1. Further, McNeely teaches that the annular space 33 between the inner and outer tubes 31, 32 is filled with a solid material to perform many necessary functions, including maintaining the spaced relationship between the inner and outer tubes 31, 32 during operating conditions. *See col. 3, line 59-col. 4, line 3.* Thus, one of ordinary skill in the art would not modify the McNeely drill collar structure to meet the claimed invention. Therefore, the Office action fails to establish a *prima facie* case of obviousness. *See MPEP §2143.*

For at least this reason, Claims 20 and 21 are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

5. The Office action rejects Claims 4 and 11 under 35 U.S.C. §103(a) over McNeely in view of Schuermann et al. (EP 0 471 240, hereinafter “Schuermann”). The rejection is respectfully traversed.

In the English translation provided by DERWENT, Schuermann discloses a hollow shaft including a shaft part 1 made of plastic, reinforced fibers with cores 3, 4, 5, 6, of which cores 3, 4 are embedded between two fiber layers 7, 8 and the cores 5, 6 represent the inner shroud of the shaft part 1. *See the Figure.* In one embodiment, the outer contour of the shaft part 1 is cambered, while the inner shroud surface is designed with a cylindrical shape having its largest diameter at a point where the shaft part 1 has its greatest thickness. In another embodiment, the shaft part 1 may have a wall thickness that remains the same over its entire length such that both the inner and outer shroud surfaces are curved appropriately. *See Page 3, lines 2-8 of the English translation.*

Claims 4 and 11 depend from Claims 1 and 9, respectively. It is respectfully submitted that there is no mention in Schuermann of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical, empty cavity within the tubular member, as recited in Claim 1, as recited in Claims 1 and 9.

Further, it is respectfully submitted that Schuermann teaches away from the claimed invention. Specifically, Schuermann teaches that only the outer contour surface of the shaft part 1 is cambered, while the inner shroud surface is designed with a cylindrical shape. Even if the shaft part 1 had a uniform thickness, Schuermann teaches that both the inner and outer surfaces are curved. *See Page 3, lines 2-8 of the English translation.* In addition, Schuermann teaches that it is favorable to provide the largest shaft diameter in the center between the connectors because the greatest bending moment stress acts at this location due to the centrifugal forces and an increase in the bending stiffness of the shaft that could possibly cause the shaft to contact and damage projecting parts close to the shaft. *See Page 3, lines 9-18 of the English translation.* Thus, Schuermann teaches a parabolic-shaped outer contour surface, whereas the outer surface of the tube or tubular member of the claimed invention is defined by an invariable outside diameter.

Because the combination of McNeely and Schuermann does not disclose, teach or suggest all the claim limitations, as recited in Claims 1 and 9, the Office action fails to establish a *prima facie* case of obviousness. *See MPEP §2143.*

For at least this reason, Claims 4 and 11, which depend from Claims 1 and 9, respectively, are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, each of the presently pending claims in the application is believed to be in immediate condition for allowance. Accordingly, it is respectfully requested that this application be passed to issue.

Applicant believes no fees are due with this response. However, if any other fees are due, please charge our Deposit Account No. 07-1360, under Order No. G00352/US from which the undersigned is authorized to draw.

Respectfully submitted,

GKN Driveline North America, Inc.

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By _____

Jennifer M. Brumbaugh, Reg. No. 48,465

Mick A. Nylander, Reg. No. 37,200

GKN Driveline North America, Inc.

3300 University Drive

Auburn Hills, MI 48326-2362

Tel. (248) 377-1200